



MY-M20F-III

Raycus Fiber Laser Marking Machine

User Manual



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Chapter 1 Preface

1.1 Thanks

Many thanks for purchasing our laser marking machine, our aim is to offer high-quality, easy-operation laser marking solution to each customer. Before using the machine, we kindly advise you to read the user manual carefully.

This manual introduces the methods of operation and maintenance of laser marking.

1.2 Company introduce

Wisely Laser manufactures a comprehensive range of laser cutting and marking systems powered by world-leading laser brands such as IPG/SPI for fiber lasers, Synrad and Coherent CO2 marking machines, and GSI and RECI CO2 engraving and cutting systems.

We bring you new concepts of industrial laser systems – proudly designed and built right here in China.

Our Mission – to be recognized as China’s foremost laser engraving, cutting, marking and etching solution provider.

Our commitment – we will build long-term mutually beneficial and healthy business partnerships.

Our Guarantee – we will deliver precisely what our customer expects to receive as defined in the sales contract, and our service and support response will deliver results within 24 hours, anywhere in the world.

1.3 Packaging checks

Every marking system has been checked strictly before delivery, only the qualified product can be shipped. When you get the cargo, we advise you to check as follows:

1. Whether the package got some problems due to rude handling.
2. Whether you get all of cargoes as per packing list. Please report to shipper immediately once you find anything which is not compatible with packing list.
3. Whether the machine can work properly once you operate it. WISELY laser engineers will install the laser marking machine well before shipment. In order to do the future maintenance, we hope users should know the installation of laser marker.

Chapter 2 Safety instruction and principle

2.1 Safety Classification (laser /electricity)

Only Four-level safety engineers are allowed to operate and maintain laser machine.

Four-level laser will produce dangerous and invisible radiation when open laser machine, the radiation will be harmful to worker's eyes and skin. Radiation of Sub-shot and reflection is also harmful to people.

Warning: Spot

When the red radiation produces refraction to eyes, it will focus on the retina, eyes will be hurt easily. The high-intensity radiation can burn the retina of local soft tissue, can lead to vision loss or blindness. In a word, you should always wear protective glasses during the machine operation or maintenance.

Warning: Wear protective glass

Protective glass plays a protective role (for direct radiation, radiation reflected and scattered radiation). However, even if you are wearing protective glasses and not look directly at the spot, intense laser radiation still can damage the protection tool.

Before wearing the glass, please check whether it is damaged. To be sure you are wearing the right glass, because the protective glass for CO2 laser can't protect the laser radiation emitted from YAG laser

Warning: Fire

Although the four-level laser output power is not high, you might as well pay more attention to the fire when the laser is working.

Warning: High voltage

Four-level laser adopts the dangerous high voltage, so the maintenance worker should have machine trained knowledge

If you are engaged in the electricity and electronic components job, please do as follows

- 1) Confirm all the voltage sources are not separated
- 2) Adopt all the safety measures
- 3) Comply with safety rules

Laser is with high instantaneous voltage ($>20\text{kV}$), must be very careful when you use. If you test electronic components on the four-level laser, you must eliminate all the leakage voltage ways. Because the high-voltage capacitor will produce high energy and voltage, it will take you some minutes to reduce high-energy by reducing electrical resistance when closing laser, you must be careful this time.



Only special trained technicians are allowed to work for electrical and electronic components in the laser.

2.2 Safety precautions

Do not work alone

When the user does service or maintenance for machine, it is better to have a worker who is familiar with risk and high-voltage laser radiation knowledge besides you. For example, once an accident occurs, this person can help you turn off the laser equipment and provide relief.

Allow air circulation appropriately

Some materials in the laser processing will produce harmful smog (such plastic), so you might as well install Exhaust system when the laser processes those materials.

Prevent the dissemination of harmful smog.

1. Laser must work in the better ventilation system environment.
2. Laser beam can make almost any materials melted and evaporated. If it is used improperly, the different processing materials will emit different harmful smog to people.
3. If you want to do any maintenance such as repair and inspection work, make sure all of the power on laser is turned off, and fixed on the main switch. Turn off the Main switch, take out of the key and stick warning tag and mark on the laser, and never re-open before problems are solved.
4. When laser is re-checked, make sure all of screws are tightened
5. When the maintenance is finished, please check whether safety installation works well



Do not make any changes to laser marking system without written authorization from WISELY laser management approval.

Noise

Laser system produces the noise under 70db.

Worker

Should be trained before operating the machine.

Control

Do not modify software or any other default settings in any ways.

The fiber laser must not be allowed to operate on the high-reflectance materials without optical isolator, such as gold, silver, copper, other high reflective polished silicon other similar materials.

Because the laser will return to the fiber laser source by the laser path once the laser hits on the very high-reflection material.

You can try to mark the high-reflection material unless the laser does not hit the material vertically.

To start laser system, you should meet the following conditions:



- 1) Application software must be used in specified methods
- 2) All of safety settings work well
- 3) Comply to all of safety rules

Safety devices

Check all safety devices if they work well.

Chapter 3 System description, theory and applications of fiber laser marker

3.1 Brief introduction for Fiber laser marking machine.

WISELY: The third-generation high-speed, permanent free-maintenance fiber laser marking is the most advanced and fast-speed laser marking in the world

Wisely fiber laser marking adopts world's most advanced technology, it is the third-generation laser marking system. It adopts fiber laser source to achieve marking function by ultra-high-speed scanning system. The fiber laser marking conversion is efficient, it adopts air-cooling mode, and the laser beam output is qualified, longer lifespan, and saving-energy. It can carve metal materials and some non-metallic materials, is mainly used in the high-request fields for depth, smoothness, concentration, such as stainless steel decorations for cell phone, watches, model, IC, cell phone buttons, etc. Photo marking can carve beautiful pictures in the metal, plastic surface, and the marking speed is 3-12 times than the first-generation pump laser and the second-generation semiconductor laser.

3.2 Typical application range

Application in integrated circuits, computer accessories, precision bearings, watches, electronics and communications products, aerospace devices. All kinds of auto parts, house electrical appliances, hardware tools, model, cable, food packaging, jewelry, tobacco, sanitary ware, etc.

3.3 Features

- 1) High Precision: upto 0.0012mm, bring you the fantastic and satisfied marking effect.
- 2) Superior Laser Beam: the definition is 1 micron, 10 times as that of traditional products.
- 3) No Consumables: One Fiber marker can work for more than 5 years without any consumables.
- 4) Fast Speed: Max. 7000mm/s, is 3 to 5 times above that of traditional products.
- 5) The laser beam comes out from the Raycus fiber laser source directly, no need to adjust the laser optical path.
- 6) Low consumption: <450W, is 1/25 ~ 1/10 times as that of Diode and YAG, more economized and environmental.
- 7) Original Beijing JCZ controller, USB interface, swift and stable transmission, easy software operation, strong functions.
- 8) Original scanning galvanometer, with good seal, capable to prevent dust and water, small volume, compact and solid.
- 9) Long lifespan of Raycus laser source: 100 000 hours (light pumping YAG: several hundred hours;



semi-conductor: 10 000 h).

- 10) Strong Compatibility: TTF Font, SHX, BMP, DXF, AI, PLT and other format files output from CorelDraw, PhotoShop, AutoCAD, etc..
- 11) Integrated Air Cooling System: The cooling effect is more excellent than the water cooling effect in YAG laser, no maintenance.
- 12) Deeper Marking: Max. 1.0mm stainless steel, very suitable for the industries which need high precision and depth marking effect.

3.4 Technical Parameters of the Fibre Laser Marking Machine

Type	MY-M20F-III
Power	20W
Laser Wavelength	1064nm
Marking Area	150mm*150mm
Optional Marking Area	50mm*50mm / 100mm*100mm / 200mm*200mm / 300mm*300mm
Marking Depth	≤1mm
Marking Speed	7000mm/s
Minimum Line Width	0.015mm
Minimum Character	0.2mm
Repeated Precision	±0.003mm
Fiber Laser Source	Raycus from China
Scan Head	Galvo Tech or CenturySunny from China
Controller (Software--EzCad)	JCZ from China
Life-span of Fiber Laser Module	100 000-200 000 hours
Beam Quality	M ² <1.6
Focus Spot Diameter	<0.01mm
Output Power of Laser	10%~100% continuously to be adjusted
Output Frequency of Laser	20KHz~80KHz continuously to be adjusted
Power Stability (8h)	<±1.5%rms
System Operation Environment	Windows XP / Windows 7--32bits
Cooling Mode	Air cooling--Built-in
Temperature of Operation Environment	15℃~35℃
Voltage	220V / 50HZ / 1-PH or 110V / 60HZ / 1-PH
Power Requirement	<500W
Computer Requested	There will be one PC with the machine
Dimension (L*W*H)	550mm*600mm*600mm
Package Size	450mm*750mm*850mm
Net Weight	50KG
Gross Weight	70KG

Chapter 4 Machine Installation and operation



4.1 Unpacking

- 1) Make sure the goods packaging is as per the shipping Marks.
- 2) Take off the seal of packing box
- 3) Remove the packing material around the unit
- 4) Check shipping list carefully, report the shipper any unmatched project with contract

4.2 Space and environment

- The system should be installed at the place without dust, strong electrical magnetic field, oil and smoke.
- It is forbidden to expose the machine in the acid steam or other caustic gas.
- To avoid vibrating and shocking, the floor should be flat and hard.

4.3 Air-cooling system

Fiber laser adopts air-cooling system, just keep the temperature between 15°C and 35°C.

4.4 Step of basic operation

4.4.1 Turn ON

1. Start computer
2. Push the auto-lock power button in the equipment to start Raycus fiber laser source (Or turn on the laser power by the key)
3. Run software EzCad, make or load a file which needs to mark
4. Prepare to mark.

4.2.2 Turn OFF

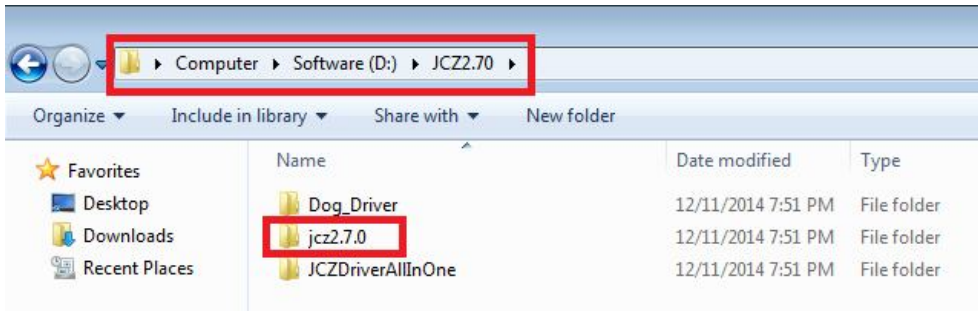
1. Save files
2. Quit the software and close computer
3. After two minutes, Push the auto-lock power button on the equipment to power off laser source (Or you can turn off the laser power by the key)
4. Disconnect main power

Chapter 5 Installations

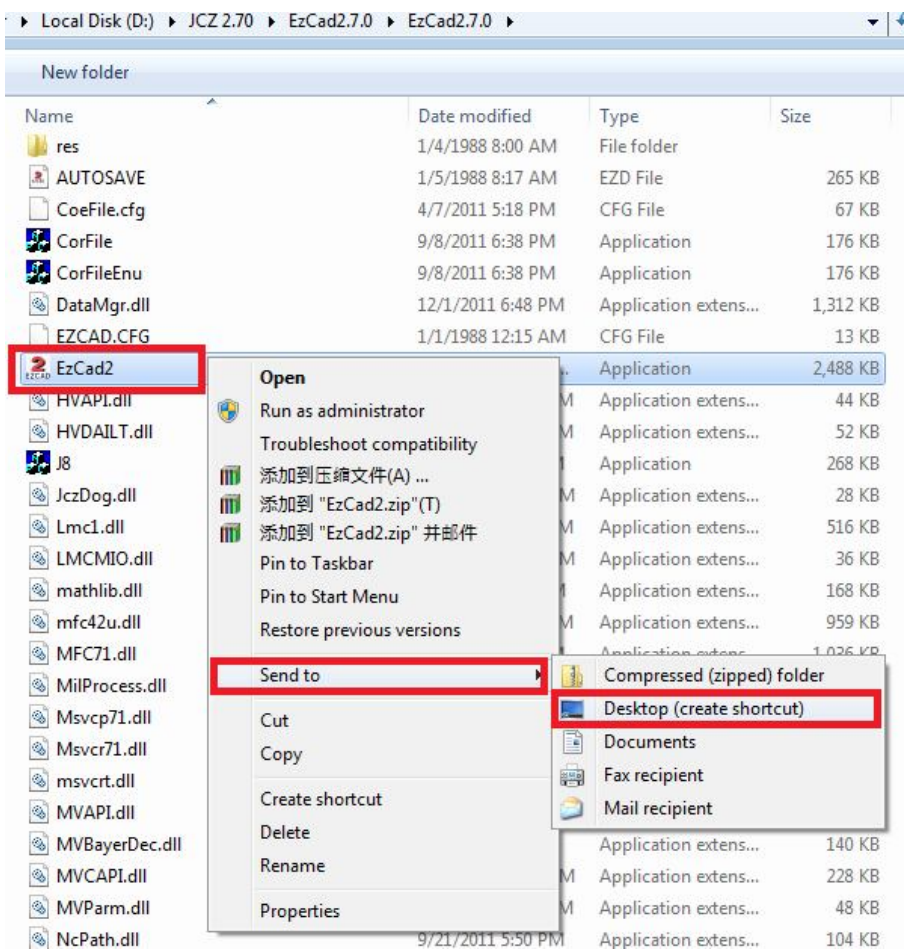
We have installed the software in the computer before delivery, the following installation information will guide you to install the software once you change the computer.

5.1 Software Installation

1. Please copy the software from the CD Disk or download it from the website of manufacturer directly, as shown in the figure



2. Send EzCad to desktop, as shown in the figure

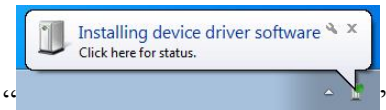


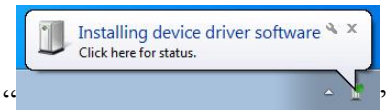
3. You will see the corn at the desktop of your computer.



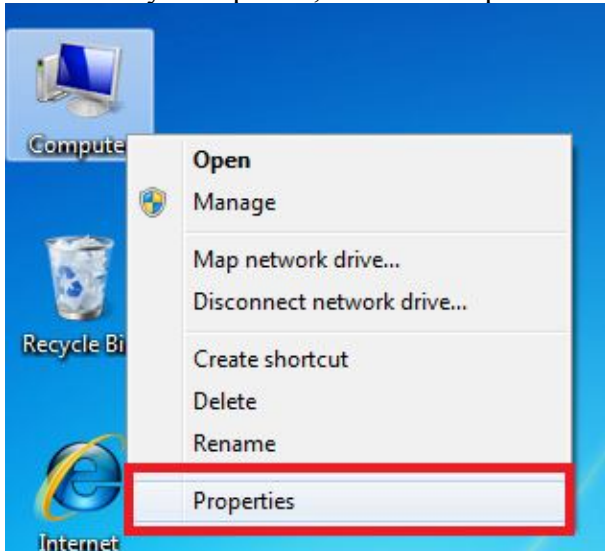
5.2 Control Card Driver Installation

1. Power on the machine, keep the control card be in “Ready Mode”.

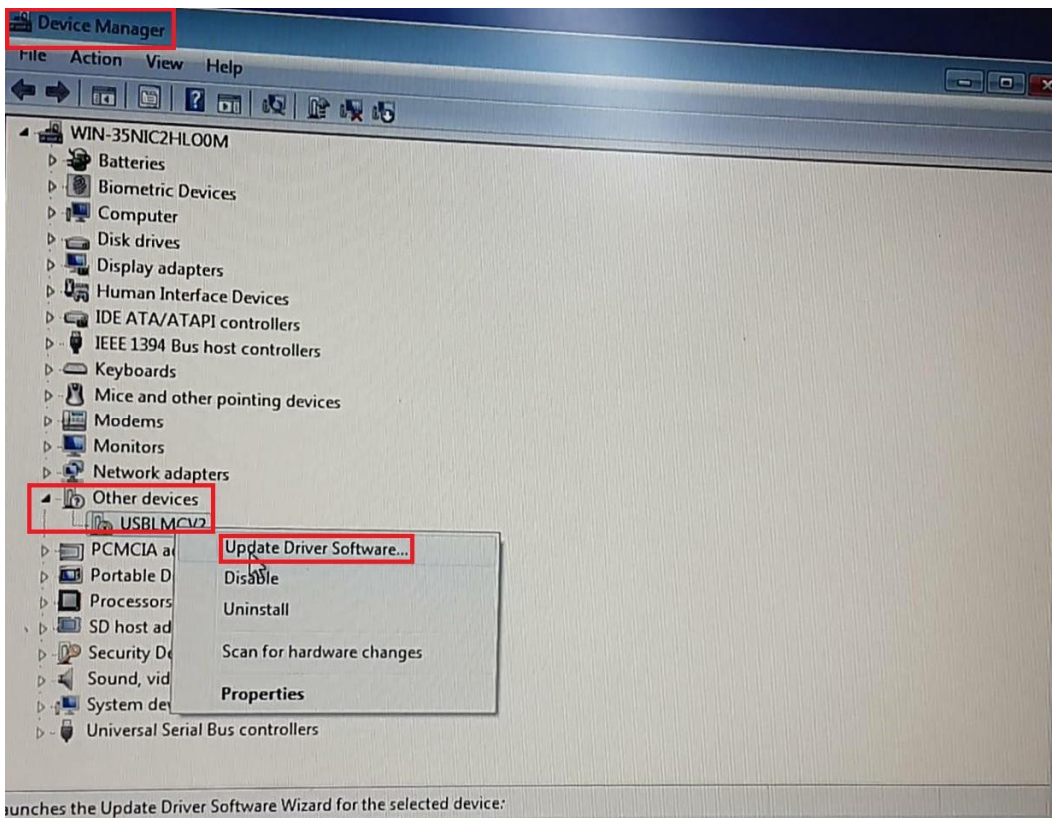


2. Connect the computer with USB cable, then the computer will show “”. Usually, you need to install the driver manually at the first time (The driver can not be installed well automatically).

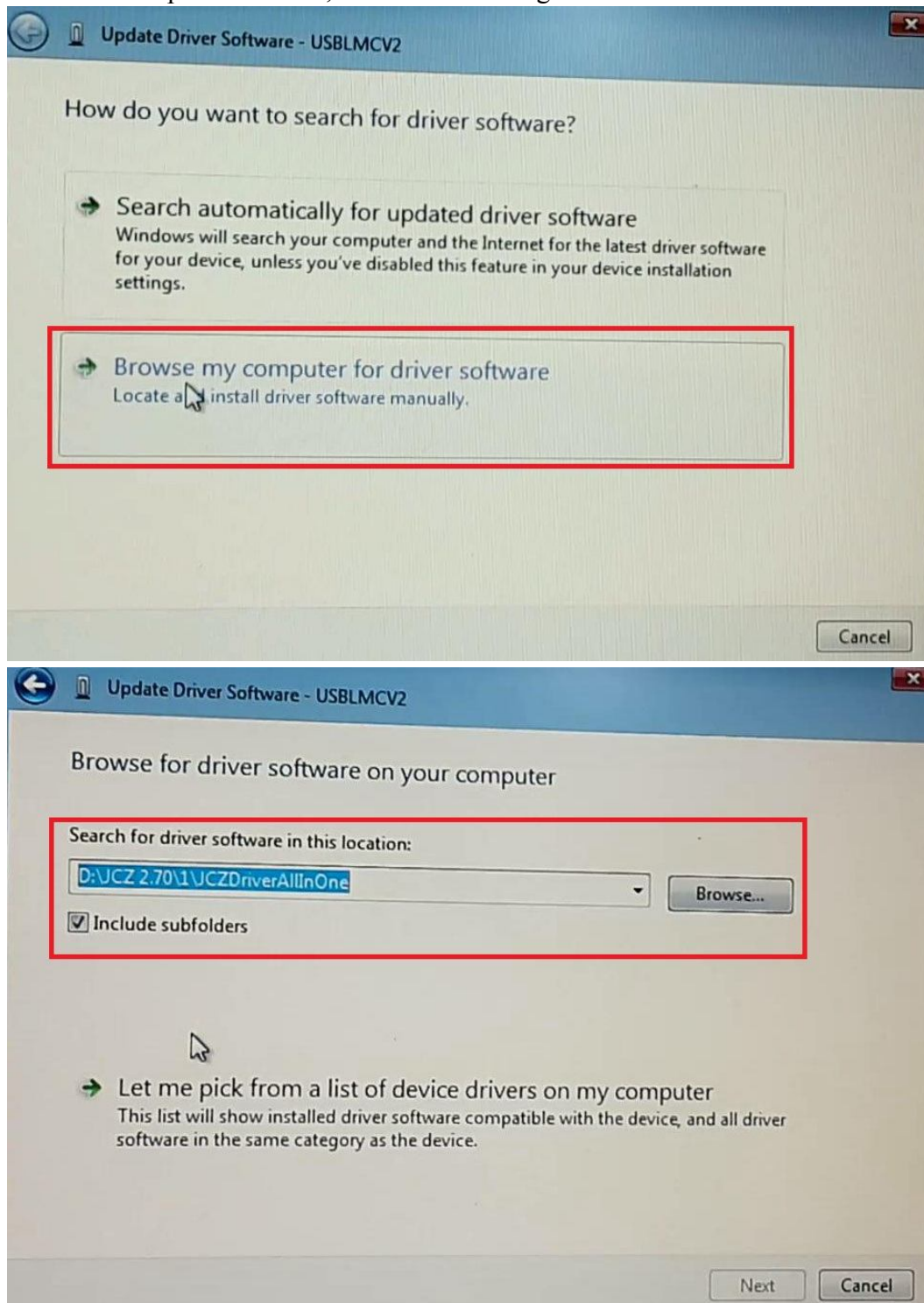
3. Find “My Computer”, choose “Properties” and “Device Manager”, as shown in the figure

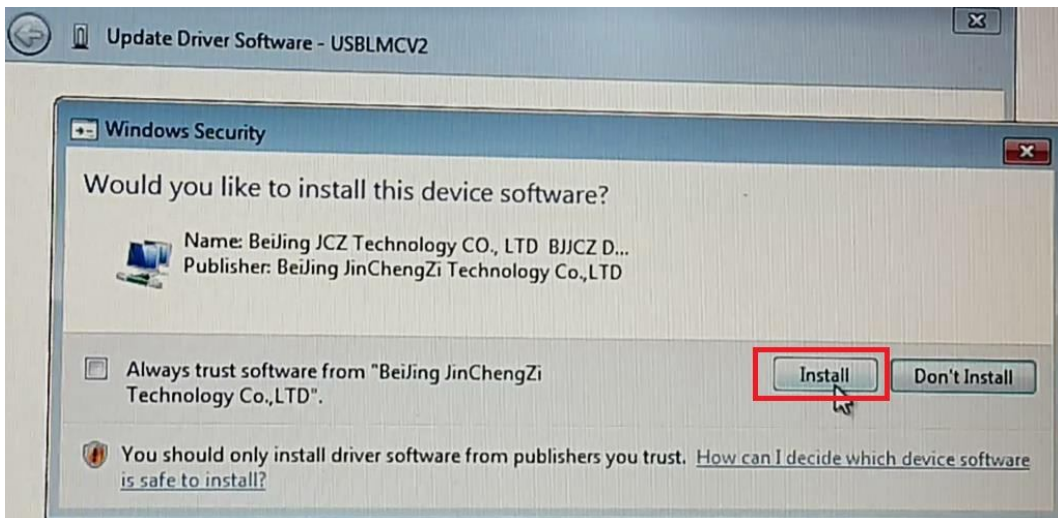
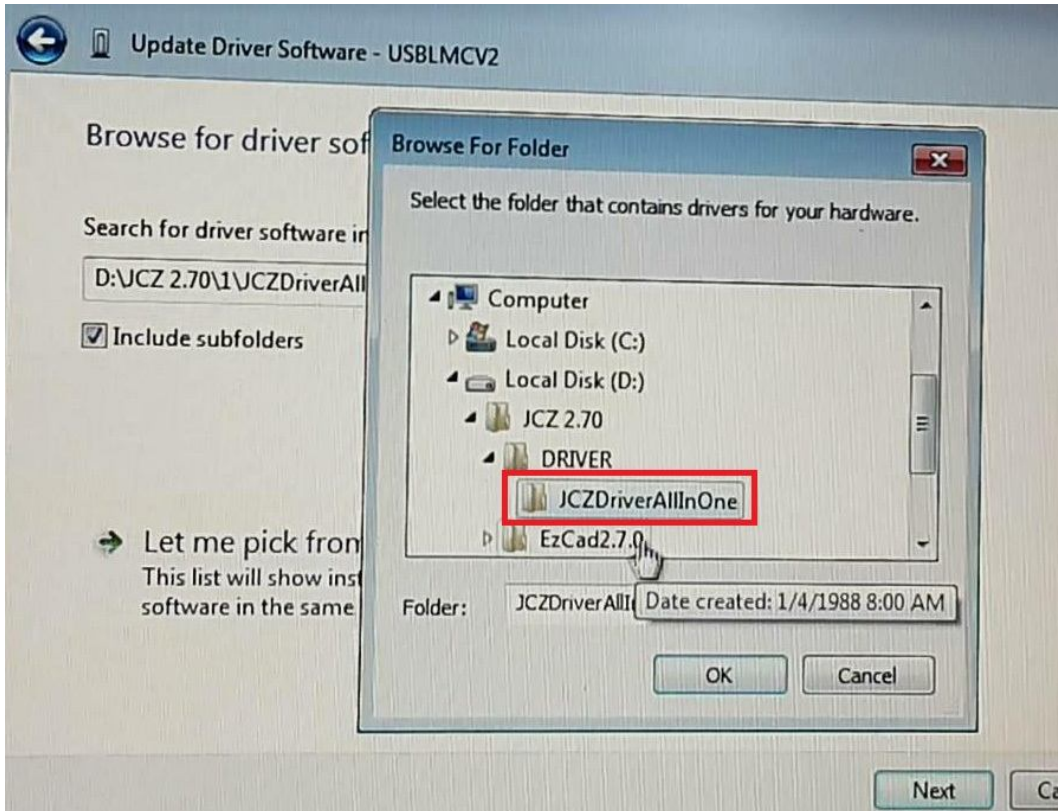


4. Choose “Other Devices” and you will see “USBLMCV2”, right-click to choose “Update Driver Software USBLMCV2”, as shown in the figure

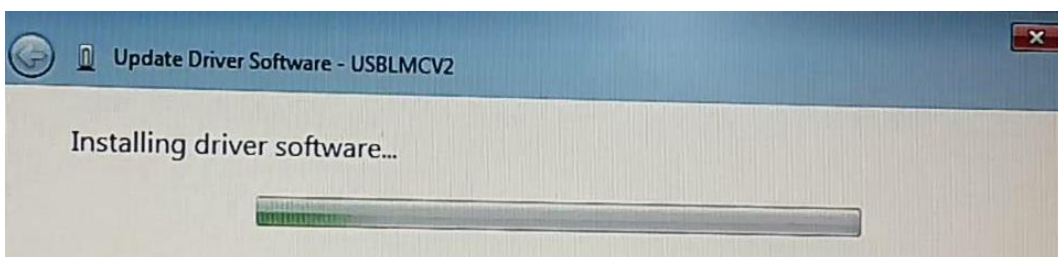


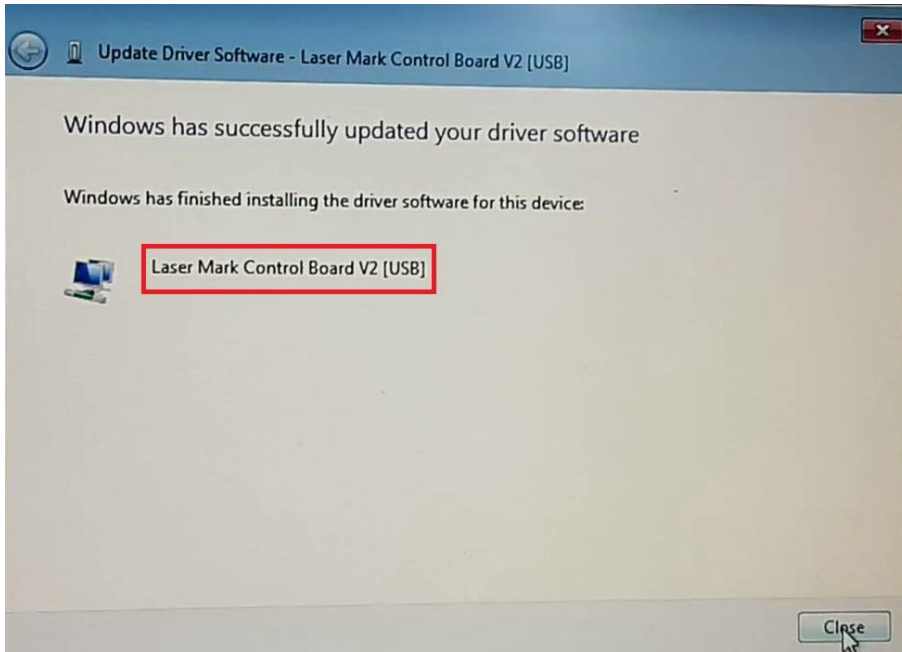
5. Choose the path of Driver, as shown in the figure





6. After finishing the driver installation, you will see “Laser Mark Control Board V2 [USB]” on “Device Manager”, as shown in the figure

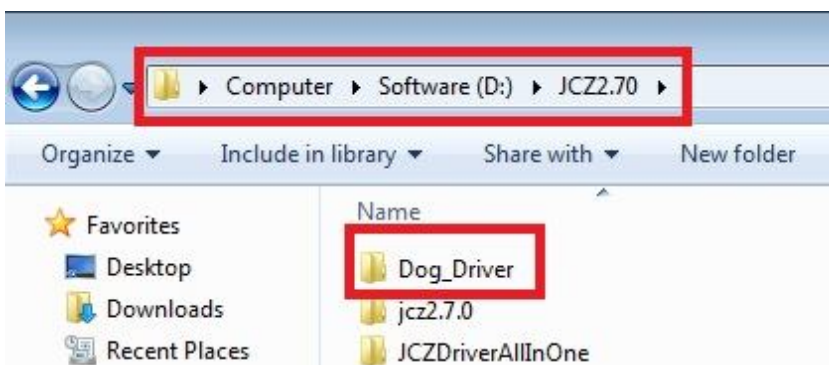




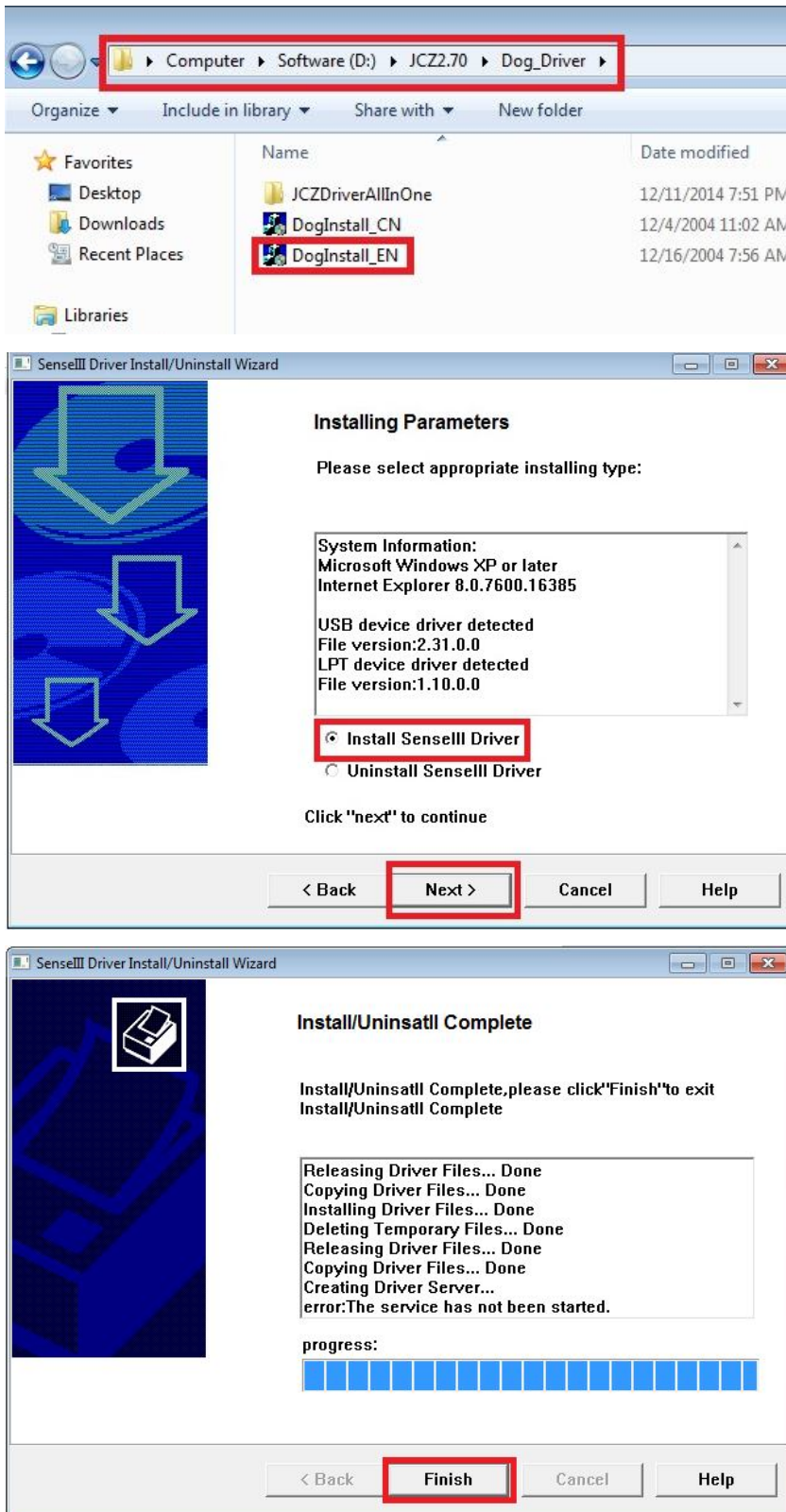
Now, the Control Card Driver is installed well.

5.3 Dongle Driver Installation

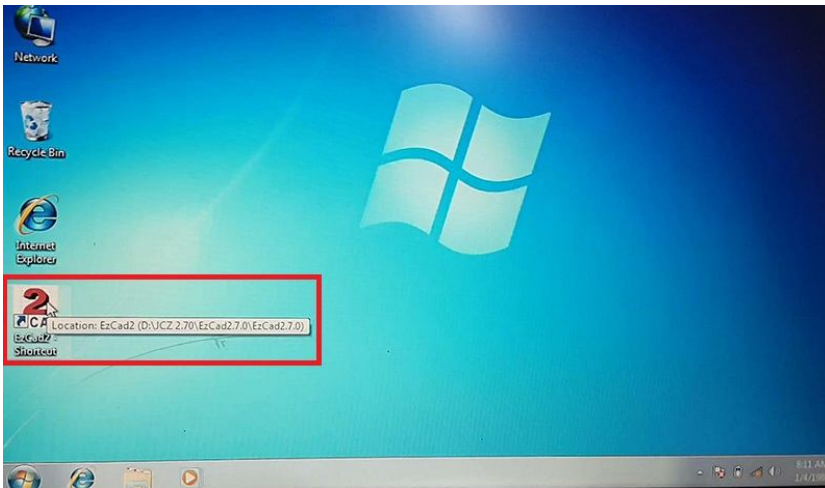
1. Find the software in D Disk, its name is JCZ2.70, and find the folder "Dog_Driver", just open it.



2. Choose “DogInstall_EN” and install it.

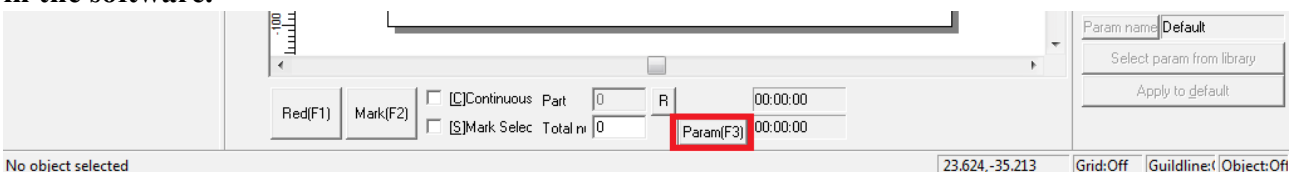


Okay, you can run the software “EzCad”, as shown in the figure

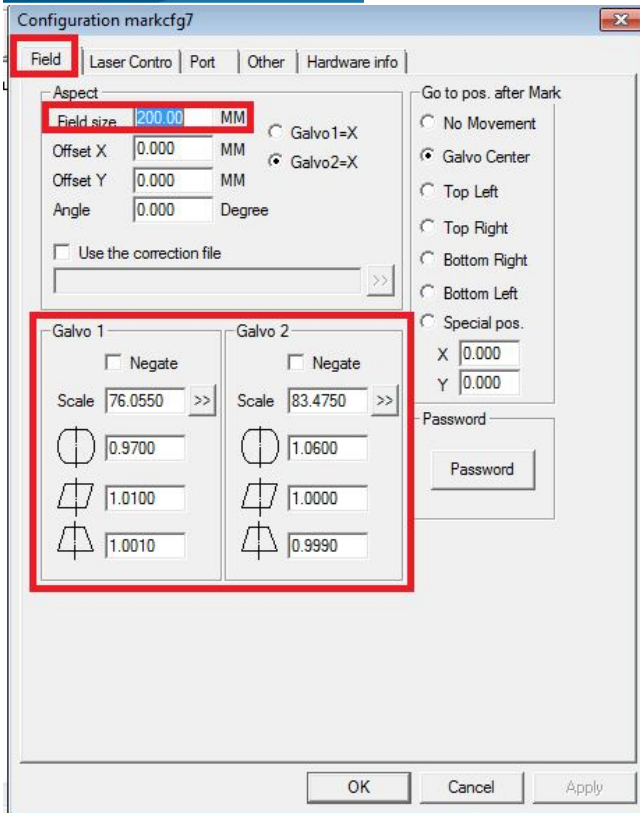


Chapter 6 Parameter Settings

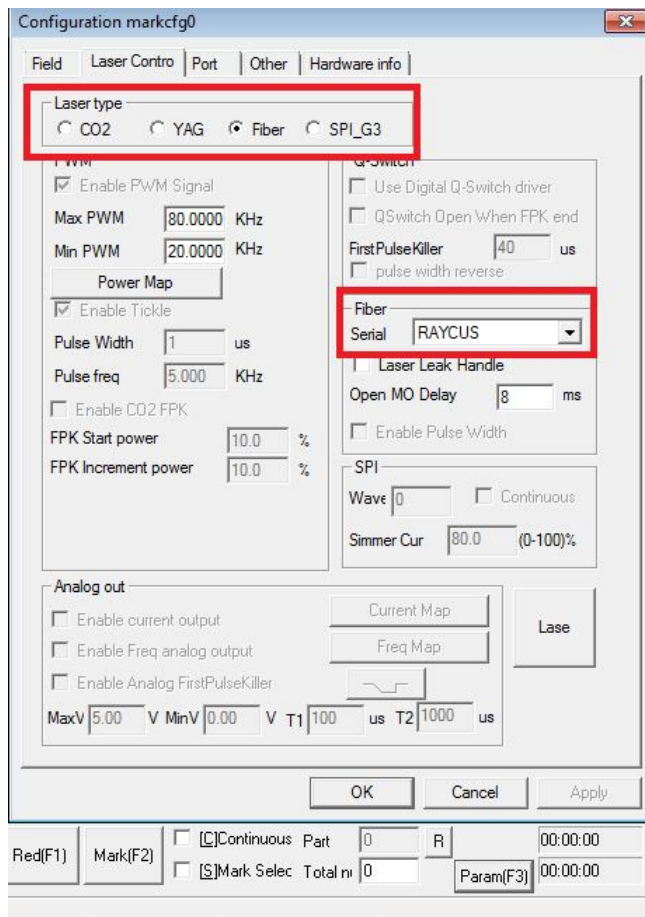
Before operating the machine, you need to do the parameter settings. The windows of parameter settings will appear once you press “F3” on the computer keyboard or click the option “Param(F3)” in the software.



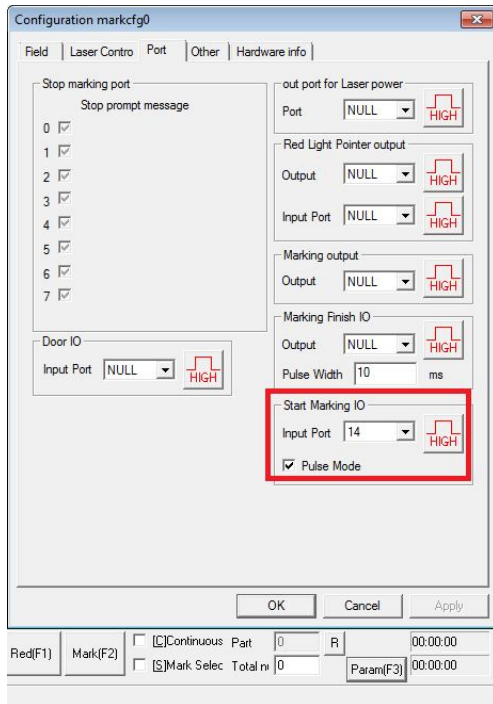
6.1 Field—To adjust the working area, and the verticality and levelness of the line when you mark a 200*200mm square box, as shown in the figure



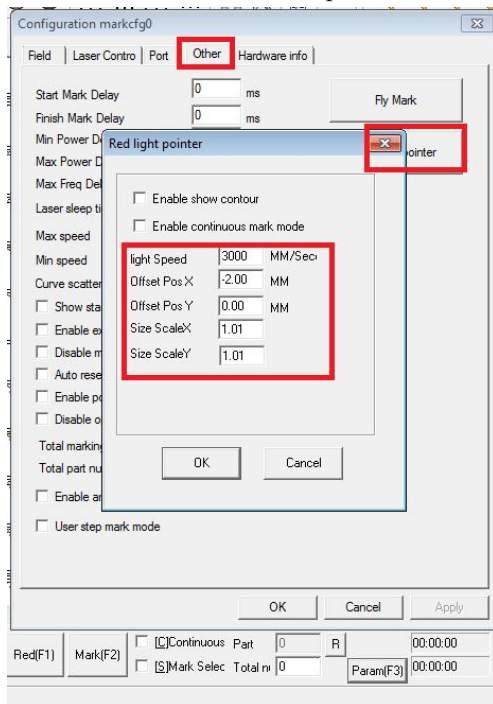
6.2 Laser Control—You need to choose the right “Laser Type” and Fiber Serial, as shown in the figure



6.3 Port—You can choose “Start Marking” and “Input Port 14”, this is for your Foot Switch, as shown in the figure



6.4 Other—You can set the parameters for the Red Light Pointer, as shown in the figure

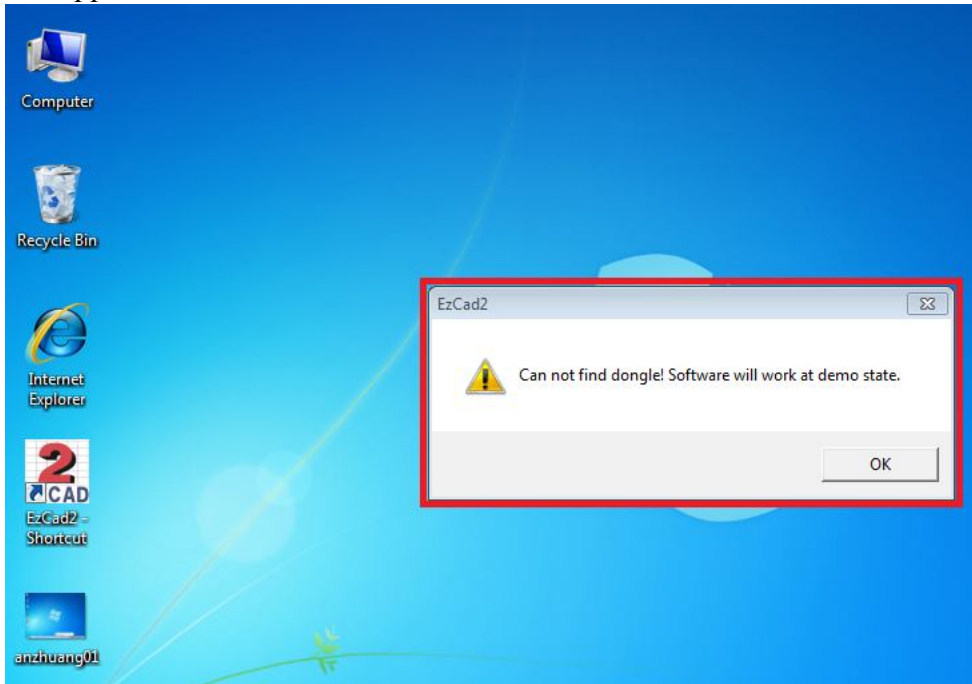


The above parameter settings are just for your reference, you need to set the right parameters as per your machine. Under the ordinary circumstance, we will set the parameters well before delivery.

Chapter 7 Error

7.1 Work in the Demo version

If it appears



, it means the software can not connect the control card, the reasons might be:

1) You did not power on the machine, the control card is not in ready mode

Solution: Just power on the machine.

2) USB connection between the control card and software

Solution: Just check your USB connection.

3) The Control Card got some problems

Solution: 1. Replace a new card; 2. Reboot your machine before you run the software.

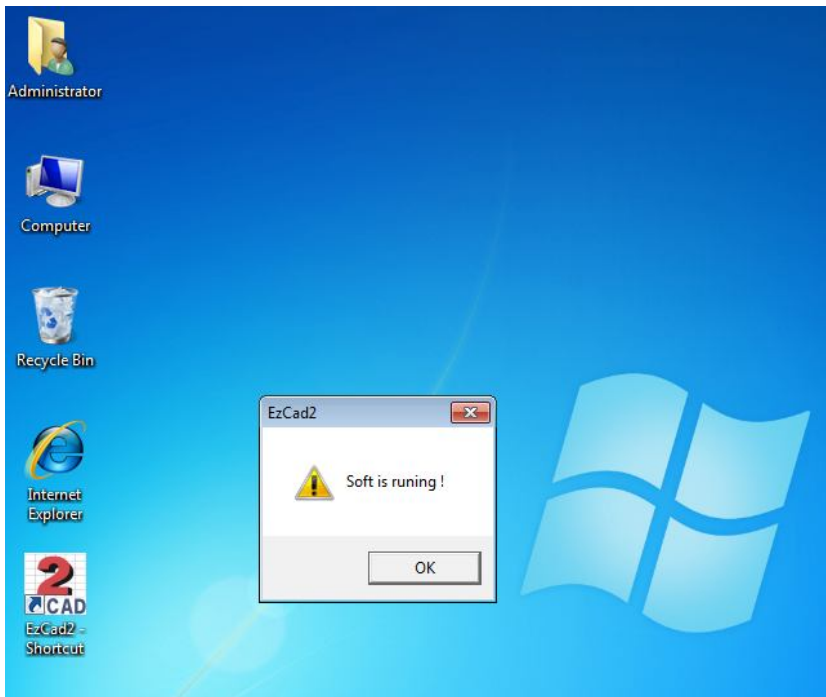
4) The operator did not install the Control Card Driver or Dog Driver properly.

Solution: Check which driver you did not install, then just install it.

Solution: Uninstall the software and reinstall it after you connect the machine and computer. Before reinstalling the software, we advise you to shut down the anti-virus software in advance.

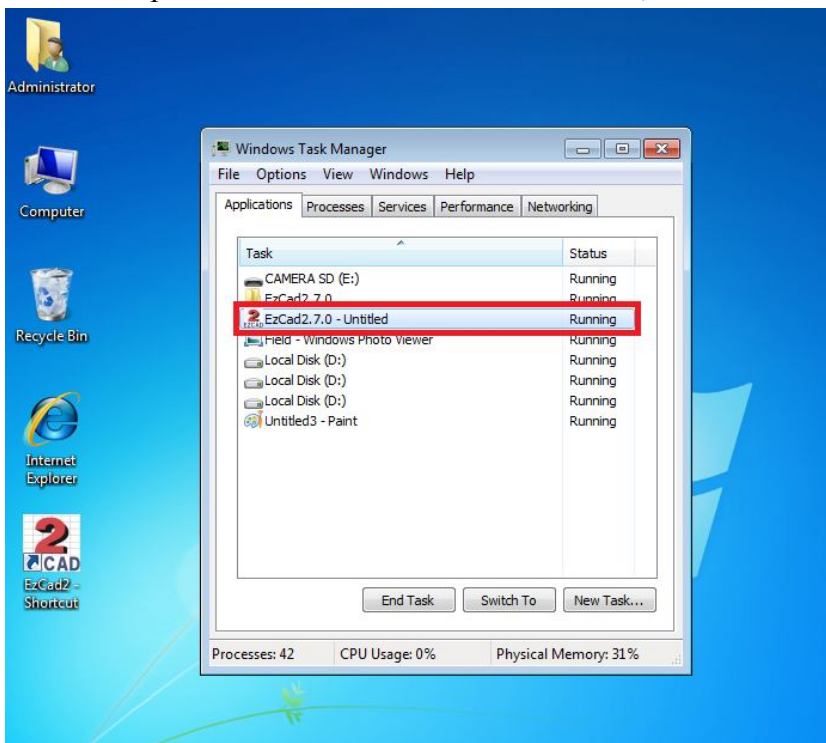
7.2 Tips software already running

Tips information as shown in the figure



If you close the software, then open it immediately, it will be happened, because the operate system hasn't enough time to release RAM

- 1) Click "OK", open EzCad software after some minutes.
- 2) If the operation is invalid, please open "Task manager" (you can use Ctrl + Alt + Delete to open it), kill the process named "EzCad2.7.0-Untitled",



- 3) If the problem is still not solved, please restart computer



Chapter 9 Daily Maintenance

After a few times, you should do some daily maintenance as follows:

- 1) Electrical control system works well
- 2) Computer system works well
- 3) Marking software works well
- 4) Elevating platform does not loose, screw does not loose and drop
- 5) Air cooling system for fiber laser source works well
- 6) Do not squeeze fiber, be sure the protecting cover is good
- 7) Keep lens clean
- 8) Keep equipment clean

Chapter 10 Service

If you need any service, please check the below contact information:

Contact Person:	Jeff Wong
Mobile/Viber/WhatsApp/Line:	0086-150 1350 9330
Skype ID:	wwlaser
Email:	service@wwlaser.hk / sales@wwlaser.hk